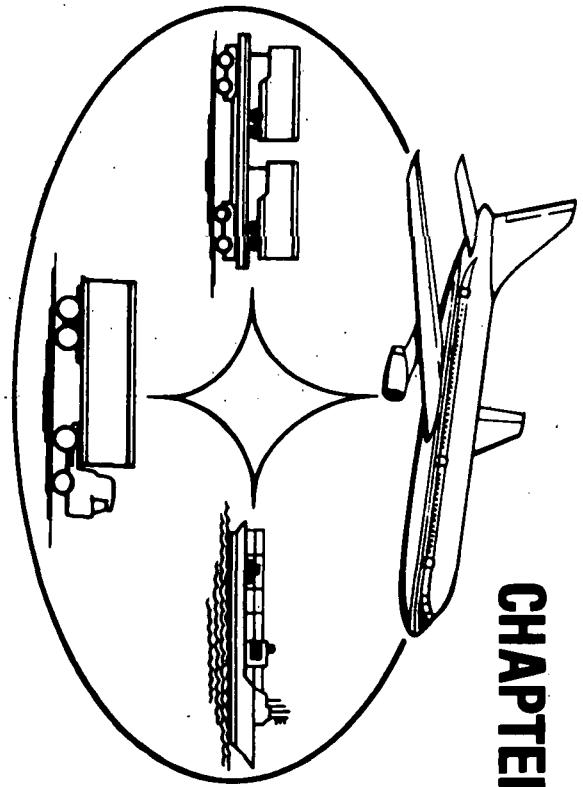

CHAPTER 3

REGULATIONS AND REGULATORY AGENCIES

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Introduction

1978 has been a year of rapid change in the air freight industry. The extensive deregulation passed by Congress in late 1977 was beginning to be felt in the marketplace, although some statutory provisions would not phase in until after this report went to press, and the CAB was actively considering regulatory revisions that would become effective even later.

In this context, an attempt to "predict" the regulatory climate as far ahead as the 1990-2015 period would be doomed to failure. At the same time, a strictly short-term approach would not provide the guidance which is the purpose of this report. Finally, the extent and complexity of federal regulation of both air carriers and other forms of common carriers made a complete survey of the details of regulatory practices unfeasible.

Accordingly, this chapter is directed to the following principal goals: First, a brief history of aviation regulation and mention of the principal agencies regulating aviation and some of those regulating the carriers with which air carriers must interact. Second, a discussion of the present economic deregulation, some of its implications for the industry, and prospects for the near future. Third, a discussion of the prospects for intermodal transportation of freight and the various legal and regulatory impediments. Fourth, a discussion of the problems presented to the industry by aircraft noise regulation and some possible approaches to these problems. The intent has been to provide both concrete guidance for the near term and an image of the sort of regulatory structure needed to optimize the contribution of air freight to the nation's economy in the 1990's and later.

3.1 REGULATORY AGENCIES

Government regulation of transportation in the U.S. reflects the evolution of the various modes of transportation. Each mode developed separately and in different time periods. Regulation of the different modes occurred for one or more of the following reasons: (1) Users of a transportation mode complained of unfair pricing practices by the owners of the mode. (2) Carriers within an industry complained of unstable market conditions and predatory competition by other carriers. (3) Promotion of stable and efficient transportation was considered to be in the national interest.

The airline industry, although a private enterprise, has seldom been very far removed from government regulatory influence. The Post Office Department began air mail transportation in 1918 but relinquished this to commercial aviation by 1927 in an effort to encourage the development of the commercial sector. Subsequent legislation continued this trend culminating in the 1938 Civil Areonautics Act which established as government policy the promotion, protection, and development of the American airline industry. But after four decades of a highly regulated system the opposing tendency of less regulation has arisen. The 1977 all-cargo air service deregulation enactment had this basic intent as does pending Congressional legislation to deregulate passenger air service.

3.1.1. The Civil Aeronautics Board (CAB)

The condition of the airline industry in 1938 was quite unlike it is today. The official rationale for the 1938 Act was to promote and protect the industry from "unrestrained competition" which was felt to be detrimental to the government and the industry (ref 1). The Act created a single regulatory agency, the Civil Aeronautics Authority, now known as the Civil Aeronautics Board, charged with the responsibility of economic regulation and control of the air transportation industry.

By regulating entry and exit in the industry, as well as routes and rates of interstate air travel, the CAB both promoted and protected the existing companies. Competition among the major carriers was effectively limited to the scheduling of service and on-board amenities on fixed routes and with fixed rates.

In 1958 the U.S. Congress passed the second major piece of legislation affecting the airline industry - the Federal Aviation Act. This amended and replaced the 1938 Act and, although not altering the economic regulatory authority of the CAB, created a separate entity - the Federal Aviation Agency (FAA) - with authority to "control all aspects of airspace management." (ref 2) This includes pilot certification, traffic rules and all safety matters.

Since 1958 there have been several amendments to the Act but no major revisions until 1977. After a series of hearings focusing on airline deregulation, the Congress, unable to agree on a comprehensive proposal, reached a compromise agreement on cargo deregulation alone and passed that as a part of an insurance risks amendment to the 1958 Federal Aviation Act. The deregulation segment of the amendment (Public Law 95-163) is hereafter referred to as the 1977 air cargo deregulation enactment.

While "ruinous" economic competition led to the 1938 Act and concern for airline safety resulted in the 1958 Act, a strong undercurrent supporting government deregulation appears to have been the moving force behind the 1977 enactment and pending passenger deregulation proposals.

Some of the major airlines have opposed deregulation, arguing that it would be detrimental to the public in general and the industry in particular. Despite this opposition there has been sufficient support in Congress, the Executive branch, and various public and private interest groups, as well as from some of the airline companies, such as United and Pan American, to ensure passage of the cargo deregulation enactment and probably ensure future passage of a passenger deregulation bill as well.

In addition to being more efficient and more economical, supporters of deregulation argue that it would be a move away from big government and toward a free-enterprise system. Thus deregulation is in the interest of both the general public and the airline industry. Opponents of deregulation, such as Eastern Airlines, argue that a move toward deregulation would be detrimental to the industry since it would result in "an overcompetitive situation" and could lead to "stagnation and nationalization." (ref 3. p.809) But in 1977 naysayers were in the minority and the first major piece of deregulatory legislation became law.

It is too early to accurately foresee how extensively the enactment will alter the cargo industry. However, with the CAB's subsequent further liberalization of the law by utilizing its authority to exempt all cargo carriers from specific requirements of the 1958 Act, the cargo side of the airline industry has the potential to be radically altered.

A major change resulting from the 1977 legislation is that the policy of the CAB now includes the provision to encourage the "development of an expedited all-cargo air service, provided by private enterprise" that would be responsive to the needs of shippers, American commerce and national defense. The service should also rely "upon competitive market forces to determine the extent, variety, quality and price of such services." This was the first time that the Congress explicitly mandated the CAB to concern itself with air-cargo service.

Other significant alternations to the 1958 Act include ordering the Board to issue newly created "all-cargo air service" certificates to applicants who are "fit, willing and able" to provide service. No longer does the applicant have to demonstrate the necessity of such service. The 1977 law also withdrew the Board's power to control routes and substantially reduced

its control over rates. In addition, the CAB has itself contributed to the deregulation movement by exempting the all-cargo carriers from certain regulatory requirements, such as reporting and accounting procedures. A final important change is that, although air carriers will be exempted from restrictions placed on consolidations, mergers, and interlocking relationships, they will no longer be immune from antitrust laws, as had been the case since the 1938 Act.

At the present time, the Board is considering several proposed rules which would further deregulate the air cargo industry and promote free market interplay.

3.1.2. International Aspects of Regulations

Although most of this study concentrates on the domestic aspect of air cargo service, the international market for such service is substantial and has experienced significant growth in recent years. From 1965-1975 combination carriers providing international air cargo service doubled their freight volume while all-cargo carriers freight volume increased 600% in the same period (ref 4, pp. 125-126). In 1975 world freight moved by air consisted of 22.3 billion RTKs (15.3 billion RTMs) with 23% of that occurring in the United States alone and nearly 60% involving shipments either within, into, or from the United States (ref 5). Yet the regulatory aspects of international air freight are quite different from domestic air freight.

There is no authoritative international agency regulating air transportation and the international system is much more complex than a national system and subject to sharp and sudden perturbations. In order to deal with this phenomenon the International Air Transport Association (IATA) was created in 1945. This followed the 1944 American sponsored Chicago Convention called "to formulate universal international air transport policy for international travel and commerce."(ref 6) Not surprisingly, the participants, representing over 50 nations, were unable to agree on a universal policy and retained the practice of negotiating routes on a bilateral basis.

A primary function of IATA is to set rates and fares on international routes, subject to approval by member nations. This has provided the airline companies with a certain degree of stability and uniformity. Yet recent reports of dissatisfaction with IATA has led the CAB to propose reconsidering American membership, raising the possibility of American withdrawl from the organization (ref 7). This inclination is the result of both dissatisfaction with the rate-fixing mechanism of IATA as well as the deregulatory mood within the CAB.

Two important issues of concern to international airlines are route locations and frequency of flights. Such arrangements have been made by bilateral agreements many of which have been modeled on the 1946 Bermuda Agreement signed by the United States and Great Britian. In recent years, nations have placed increased restrictions on flight frequencies and authority to transport cargo or passengers from or through one of the signatories to another foreign country. Such restrictions clearly hinder the development of an efficient and integrated transportation system.

One potential problem faced by American international airline companies is that many foreign airlines are government owned or subsidized, thus placing American private enterprise at a disadvantage when negotiating such agreements. According to William T. Seawell, Chairman Pan American Airways:

> U.S. flag carriers face increasing competition from foreign carriers, old ones better managed and more strongly financed than they have been in the past, new ones spring up for reasons of national interest and all supported with a new nationalistic aggressiveness by their parent governments. (ref 3, p.453).

Yet this has hardly been the case. Foreign airlines have at least as great a desire for routes to the United States as American airlines have an interest in routes to any single foreign nation. In addition, the enormous influence of the United States in international commerce has resulted in American airlines faring quite well in most bilateral arrangements. The United States Department of Transportation recently announced a proposal that outlined a much more assertive American position in negotiating international air transport agreements. It stated that one aspect of its negotiating policy would be to "agressively pursue our interests in expanded air transportation and reduced prices." (ref 8) This policy coupled with the CAB's inclination to withdraw support from IATA makes it appear highly unlikely that the American airline industry will, in any way, be at a disadvantage in negotiating international service agreements.

3.1.3. Related Regulatory Agencies - The ICC and FMC

The other agencies regulating common carriage transportation, the Interstate Commerce Commission (ICC) and the Federal Maritime Commission (FMC), impact air cargo service through controls over their carriers who provide carriage prior or subsequent to transportation by air. Of the two, the ICC regulatory impact is substantial. Under the Interstate Commerce Act, the ICC has jurisdiction over motor carriers, railroads, (inland) water carriers, and freight fowarders. However, the Act exempts from ICC regulation motor carriage of property which is "incidental" to air carriage. As would be expected, the CAB and ICC have had a historical and ongoing dispute over the boundary between their respective jurisdiction, focusing on the meaning of the word "incidental" in the exemption clause. What resulted was CAB control over pick-up and delivery services within a 25 mile radius of the airport or city limits served by the motor carrier. All motor carriage moving outside of this 25 mile barrier is regulated by the ICC with a few exceptions. This so-called 25 mile "rule of thumb" continues to be a substantial barrier to the expansion of air cargo service to new outlying markets. However, on recommendation from several parties, the ICC in 1977 proposed an extension of the limit out to 100 miles, the fate of which is still under consideration at the present time.

Regulatory authority over common carriers operating United States and foreign flag vessels in transoceanic and coastal commerce is vested in the Federal Maritime Commission. There has been insignificant CAB-FMC jurisdictional friction in the past as the air and sea modes operated virtually

independent of each other. But with the advent of air/sea service using containerization in recent years, the FMC will naturally influence air cargo service through its authority over the sea connection.

3.1.4. *Institutional Constraints and the CAB*

In the theory, the CAB, as an independent government agency, merely carries out its regulatory functions as mandated by the United States Congress. But this mandate is seldom clear, and is in some instances contradictory. According to the amended 1958 Federal Aviation Act the policy of the Board shall be to:

1. encourage the development of an air transportation system suited to the needs of American defense, commerce and the postal service;

2. regulate air transportation so as to foster safety and sound economic conditions;

3. promote adequate, economical and efficient service;

4. have competition "to the extent necessary to assure sound development" of such a system;

5. encourage the development of "an expedited all-cargo air service system, provided by private enterprise."

To develop a safe, efficient, competitive system that provides adequate passenger, cargo, and mail service and meets the needs of national defense is clearly difficult if not impossible. In addition, there is substantial disagreement regarding the meaning of such terms as adequate, competitive, and efficient.

But upon close examination it is evident that the activities of the CAB, like the other regulatory agencies, are sharply circumscribed by institutional and political forces. Members of the Board are nominated by the President for a fixed six-year term subject to Congressional approval. The President also appoints the Board Chairman for a one-year term, thus assuring that the Chairman, if not also the Board, would be supportive of relevant policies of the Executive branch. Other considerations limiting the actions of the Board are: the interests and policies of the Department of Transportation may overlap with those of the CAB; the President must approve any regulatory changes pertaining to foreign air travel; the power of the Board to issue a particular order under the Federal Aviation Act is subject to judicial review in Federal Court.

Institutional tendencies also limit the Board's independence as well as its effectiveness. Delays in arriving at decisions, overresponsiveness to the interests of the regulated industries, failure to coordiante policies and activities with other agencies and departments are some of the major limiting factors.

Studies seem to indicate that the CAB is afflicted by the same influences and tendencies of most bureaucratic agencies: it tends to assume that its immediate interests and the interests of its clientele are synonymous with the public interest; it is subject to the political influences and pressures of special interest groups, particularly those it regulates; its policies are narrow and inconsistent since they are usually formulated on a worst case basis (ref 9,10,11). These factors combined with the broad array of policy objectives mandated by Congress and the inclination to tailor its policies to the concerns of the Executive branch often result in complex and even contradictory policies. The current support for deregulation could disappear or be significantly altered following the election of a new Administration and/or the appointment of new board members or chairmen. It is unlikely that these broader tendencies will be significantly altered in the near future or that the Board will radically change its policies, current deregulation trends not withstanding.

3.2 CAB Requirements

3.2.1 Recent Changes Resulting from Deregulation

The regulatory situation in the air cargo industry is now in a state of rapid change. Therefore, this section will discuss some of the specific aspects of the changes resulting from the 1977 law. The deregulation enactment added a new section to the Federal Aviation Act, Section 418, creating a new certification process specifically for domestic all-cargo service. It provided that all certified carriers, supplementals, and air taxis which had furnished all-cargo services before the enactment would be "grandfathered," thus automatically receiving the new operating certificate upon application. Any citizen wishing to become a new entrant to the all-cargo market is required to wait for one year after the November 9, 1977 enactment date before applying for section 418 operating authority. By eliminating the showing of "public convenience and necessity" required of applicants under section 401 of the Act, and specifying that an applicant must be granted a 418 certificate unless found not "fit, willing, and able," virtual free entry was established for new entrant hopefuls.

Since section 418 was hastily enacted, its language is often unclear, resulting in problems of interpretation. In several respects, the enactment poses more questions than it answers. Subsection (b) (1) (B) states that unless an applicant is not fit, willing, and able, "the Board shall issue a certificate . . . authorizing the whole or any part of the all-cargo air service covered by the application." What do the words "whole or any part" mean in terms of the Board's authority? Since the definition of "all-cargo air service" includes the carriage of property, mail or both, does application to carry only one of these constitute a request for partial service, which the Board must grant? The service is defined the same whether either or both types of cargo are carried; thus, the definition itself offers no division. In addition, this "whole or any part" provision was omitted from the grandfather certificate requirements. It is possible that Congress intended that the Board have some discretion as to the type of service a new entrant would be allowed to perform. Under this latter interpretation, it appears that the Board has a potential entry control beyond the "fit, willing, and able" criterion.

A similar problem exists where the section permits the Board to revoke a certificate for a carrier's failure to provide "minimum service." Presently, no one seems to know what is meant by "minimum service." The magnitude or form of service that must be maintained is unknown and may be determined in the future. The phrase remains, however, as a potential for Board control.

Because air cargo deregulation was split from its parent bill and hurriedly passed, the CAB was caught somewhat by surprise. The agency was not really prepared to implement deregulation on such short notice. However, the Board was philosophically committed to free market competition; thus, it issued interim regulations granting carriers a series of exemptions from Board control.

The Board's present policy is to promote free market competition in air cargo, thus permitting the deregulation experiment to proceed with minimal regulatory interference. The success or failure of deregulation in the air cargo industry will determine whether the Board reinstates controls in the future.

Congress has mandated that free market competition be the cornerstone of the all-cargo industry. However, a couple of provisions in the enactment demonstrate a Congressional intent to preserve a degree of regulation. The law created new tariff filing and new tariff review requirements under sections 403 and 1002 respectively, designed especially for the carriage of property as distinguished from passenger regulations. If Congress has intended total deregulation, they would have omitted such requirements altogether, instead of creating new, special ones. The intent of Congress was for the Board to effectively preserve its limited right to review cargo tariffs under section 1002. This intent should be measured, however, in terms of the present air cargo market. Congress may have intended for the Board to actively maintain its review authority during the transition to free market competition, after which the Board, at its discretion, could grant exemptions from review where the market was protecting fair trade. In large measure, it will be for the Board to define the Congressional intent, but ultimately the Courts may have to decide the issue.

Potentially the most significant aspect of the new section 418 is the Congressional grant of authority to the Board allowing it to exempt all-cargo carriers from any section of the Federal Aviation Act which the Board by rule or regulation deems appropriate. The Board has already issued exemptions from several sections of the Act in recent months. It is conceivable under this provision for the Board to completely exempt all-cargo carriers from the Act. By the same token, the Board may revoke such exemptions by subsequent rules or regulations. In order for the CAB to define itsnew role as a regulatory agency, a balance must be struck between its Congressional mandate to deregulate on one hand, and an awareness by Congress and others of the need for some continuing regulation. It is the establishment of this equilibrium defining the Board's role which will determine the future of the system.

3.2.1.1 Tariffs

Tariffs are written statements of the rates, rules and practices under effect in or proposed for an air carrier's or an air freight forwarder's service. Tariffs must be filed with the Board and constitute public notice of their contents. By statute, air carriers must file any changes in their tariffs 60 days before the effective date of the change. Air freight forwarders must file only 45 days in advance. The rates, rules, and practices filed in a tariff may be reviewed by the Board under section 1002 of the Act, which gives the Board a limited authority to alter them when found to be in violation of that section.

The Board has decided not to exempt all-cargo carriers from filing tariffs, at least for the near future (ref. 12). In its decision, the Board noted that filing was necessary to monitor the economics of the industry during the transition to free market competition. The Board mentioned, however, that maintaining the tariff filing requirement was arguably inconsistent with effective competitive ratemaking, and hinted at dropping the requirement after free entry takes effect in Fall 1978.

If free market forces are to effectively govern the industry, it is necessary to reduce as much as possible artificial economic conditions created by remaining requisite regulation. Yet, the system will be best served if the tariff filing requirement is retained in an altered form. Filing is needed to enable the Board to monitor the industry so as to effectively fulfill the Board's duty under section 1002 to guard against prohibited tariff practices. At the same time, advance filing should be eliminated to erase the economic imbalance created by the lag time between filing and effective date. By requiring filing of tariffs on the date of effect, rates will immediately and accurately reflect the market, but simultaneously giving the Board a sufficient "picture" of the industry to intelligently enforce against prohibited tariff practices.

3.2.1.2 Routes

Section 418 of the Act prohibits the Board from restricting the points to be served by domestic all-cargo carriers. These carriers may freely choose the points they will serve as well as the routing between those points. The geographic scope of section 418 operating authority is air carraige in commerce among the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Also included are flights between points in the same state except within Alaska and Hawaii, which pass outside the airspace of that state, and flights between points within any U.S. possession or territory (excluding Puerto Rico and the Virgin Islands), or the District of Columbia.

The routing of cargo carried in the bellies of combination aircraft operating under section 401 certification remains regulated as a consequence of continuing passenger regulation. Since passenger routes are regulated, the cargo in the bellies of passenger aircraft is subordinated to the passenger routing. Of course, air transportation of some cargo may include both all-cargo and belly movement, and that part which in all-cargo carries is unrestricted.

Presently, passenger aircraft may not deviate from their authorized passenger routes in order to provide cargo service to other points. This restriction limits the potential flow of belly cargo. Deregulation in the passenger field may give the airlines more routing flexibility which would result in greater compatability between the cargo and passenger services of combination carriage. However, even with passenger deregulation, the carriage of belly cargo will remain subordinated to the particular needs and scheduling sensitivities of passenger carriage.

3.2.1.3. Rates

The 1977 deregulation enactment substantially reduced the authority of the CAB to regulate the rates charged for the carriage of property by aircraft. Under section 418, the Board may not impose conditions or limitations on "all-cargo air service" certificates restricting rates. This action marks the first time Congress has specified such regulatory relief for a class of carriers. Heretofore, Congress had delegated all such decisions to the Board under the Act. Now all-cargo carriers have Congressional permission to freely set their rates.

Another significant change with potentially greater impact on deregulation was a reduction in the Board's authority to review air cargo rates under section 1002. Congress amended the section to create a new and separate standard for the review of cargo rates as opposed to review of passenger rates. The amendment eliminated the power of the Board to find rates in violation of the Act because they are "unjust or unreasonable." In addition, the Board may no longer suspend rates under review. The Board was granted the more limited authority to "alter" rates which are found to be unjustly discriminatory, unduly prejudicial or predatory. This new review standard applies to the carriage of property in interstate commerce whether as an all-cargo service or as belly cargo.

The importance of the new review standard is that it has eliminated the "unjust or unreasonable" standard which has been the foundation of cargo rate review since the Board was established. The terms "unjust or unreasonable," because they are capable of broad meaning, have given the Board great latitude in examining rates. These terms have been the standard against which all rates ere measured, and provided the core of the seven year long Domestic Air Freight Rate Investigation (DAFRI) which was the most extensive review of air cargo ratemaking ever undertaken. The Board recently decided to vacate nearly all of its orders under DAFRI because they were made obsolete by the elimination of the old standard (ref. 13). Only a few orders were left in effect, because they did not rely on the "unjust or unreasonable" rationale.

The meaning of the new limited standard is yet unclear in practice. The words "unjustly discriminatory, or unduly preferential, or unduly prejudicial" were included in the old standard. The amendment has added the "predatory" criterion. While the first three terms constituted part of the old standard, they were usually defined in terms of rate levels set by the "unjust or unreasonable" rationale. In actuality, the Board often involked neither of these three terms because the broader "unjust or unreasonable" standard could cover many situations. The Board in vacating DAFRI stated that whatever these terms meant under the old standard is not necessarily applicable today, and that once "reasonable" practices might now "present questions of unjust discrimination or undue preference or prejudice" (ref. 13, p. 5).

The Board has currently adopted a policy stating that issues involving the new standard must be determined in light of the facts and circumstances of each case. Generally, though, discrimination is defined as charging different rates for a like and contemporaneous service in the transportation of like traffic under substantially similar circumstances and conditions. Undue preference and prejudice are similar to discrimination, but involve services to different points which are merely related and not alike. Predation is essentially pricing below cost with the intent of driving out competition.

It should be said that the Board currently intends to apply these standards sparingly in order to promote free market flexibility. The Board has stated that these standards will only be defined in terms of rates established by market forces. If the Board acts too soon in enforcement of these standards, their interference in the market would influence the very ratemaking process from which the standards are to be defined. Time is needed to allow the air

cargo market to develop into a mature state before the standards are too strictly imposed. Only time will allow the standards to effectively reflect the market conditions which will define the standards in practice.

While the Board no longer has the power to suspend or prescribe rates, it may "alter" a rate after finding the rate in violation of one of the standards discussed above. What exactly is meant by the Board's power to "alter" rates is unknown at present. In light of the standards of unjust discrimination, undue preference or prejudice, which basically define inequitable practices, it is reasonable to conclude that the Board has the power to alter the violative rate by making it equate to the rates to which it was compared. It might also allow the Board to average rates if market forces show that the alteration of the violative rate will change the comparative rate. In other words, the Board may alter individual rates, establish equal treatment, but it cannot prescribe what the overall rate level will be. As for predation, the Board will have more control and discretion because it must first determine what the costs are before deciding if rates are below costs, and then decide if there is an anti-competitive intent involved. It would then have to set what it considered a competitive rate. In any event. these are merely suggested interpretations of the Act from a careful reading thereof and are presented as a guideline for understanding. The Board will have to act to give a more definite meaning, and the interpretation by the Board will, in all likelihood, be contested in court.

3.2.1.4. Rules

Rules, as opposed to rates, are the statutory common carrier obligations of an air carrier. Such obligations include the requirement to be liable for loss or damage and to generally carry the goods of anyone upon a reasonable request. Rules are filed in tariffs in the same manner as rates. They are also subject to the same basic review as rates under the amended section 1002. The comments above on the Board's current authority to review rates should generally apply to rules as well.

Of the various rules filed, those establishing the liability of air carriers for loss or damage of goods carried are of great significance. The liability obligation is a traditionally important duty of the common carrier. Under common law, with a few exceptions, common carriers are absolute insurers of the goods they carry. They are held liable up to the value of the goods carried.

Statutory laws, including the Federal Aviation Act, have replaced common law in establishing liability requirements for common carriers. Either expressly by statute or by regulations promulgated under statutory authority, common carrier liability has been limited and/or expanded in numerous ways. Before 1977 deregulation, the Board limited air cargo liability to $9.07 per pound. At the same time air carrier liability was expanded by the Board to include special or consequential damage liability not required under common law.

The Board may no longer prescribe liability rules under the amended section 1002, and its power to alter rules may be exercised only in limited circumstances. The courts on the other hand, with one exception, have held that they have no authority to review rule or rate tariffs lawfully filed with

the CAB. These court decisions rest on the theory of "primary jurisdiction" which states that the courts have no power to review regulatory matters where Congress has delegated such authority to a regulatory agency. As a result of this regulatory and judicial impotence, air carriers are free to set their own liability rules with virtual immunity from review. Several air cargo carriers have recently reduced their liability limit to $.50 per pound and have exempted themselves from special or consequential damages. The Board allowed these changes pending a determination of its post-deregulation authority, but hinted that its authority is probably very limited.

The adverse effect of these changes on shippers is obvious. Air carriers cannot be allowed to all but absolve themselves from liability. Recommendations on this matter are proposed later in a discussion of bills of lading.

The duty of an air carrier to furnish air transportation upon a reasonable request is found in section 404 of the Act. Usually rules filed in this regard are attempts by carriers to exempt themselves from this duty with respect to certain requests for service. A notable example of this process is the long-standing attempt by air carriers to exclude themselves from having to carry live animals as small packages. Only recently, the Board decided that section 418 certified carriers must continue to provide this service because it is a "reasonable request" (ref. 13 pp. 7-9). However, this decision was made pending a final determination by the Board at a later date of the overall common carrier duties of section 418 certified carriers. If a long-term unified transportation policy is developed, it is possible that special cargo such as live animals and hazardous substances might be carried only by particular modes or over particular routes. Pending such policy, however, it would be unwise to allow the air carriers to substantially eliminate this service.

One final note on the duties of air common carriers. Section 404 requires that air carriers provide service with reasonable rules, while section 1002 limits the Board's authority to alter rules. Unless the Board should exempt 418 certified carriers from section 404, that section provides the Board a method to require at least a minimum level of carrier responsibility even where it cannot alter the rules under section 1002.

3.2.1.5 Current Trends

It is still too early to reach solid conclusions as to the effect of deregulation on the air cargo industry. Most commentators agree that no major trends will appear until after free entry takes effect in Fall 1978. However, current trends do give some hint of industry response to free market competition.

Service has expanded generally. All-cargo carriers have added service to new points which they could not acquire approval to serve before deregulation. Carriers have expanded their fleets in number and size of aircraft, enabling them to offer more service to more points. The result was a notable increase in domestic ton-miles for the first quarter of 1978. This rapid increase in service reflects an adjustment of the all-cargo industry to market demand.

Ratemaking also appears to have been affected by market conditions. There has been a general increase in commodity rates contrary to the expectations of many proponents of deregulation. However, the rise can be attributed to existing carriers taking advantage of the current situation in which there are only a limited number of competitors in the market. After November 1978, the entry of new competitors should drive rates downward. Assembly and distribution charges and rates for specialized services, like the carriage of live animals, have substantially increased, an apparent reflection of the additional and special costs of these services in light of the limited demand for them.

Yet there have been rate reductions as well. Several carriers have introduced discounts for space-available daylight service or guaranteed regular shipments over a minimum weight in bulk loads or in containers. The overall rate reduction for daylight service is consistent with the low market demand for daylight cargo service. Accompanying rate differentials allowing greater discounts for larger bulk or container shipments is also consistent with market pricing since cost per unit decreases as shipment size increases. Moreover, carriers have engaged in discount-offer competition, each attempting to give the best discount.

Besides recent changes in liability rules, carriers have altered the unrouted traffic rules. Carriers no longer, as previously required, charge the lowest line-haul rate between two points, regardless of the actual routing. Instead, carriers are now determining the routing when not specified by the shipper, and are assessing freight charges on the actual routing of the shipment. The result is that charges more closely reflect costs. With the entry of new carriers, routing under this scheme should become more rational, as carriers compete to offer the shortest routing.

3.2.2 Impacts on Management

With the present rapid changes in the regulatory situation, it is difficult to project even two or three years into the future, and impossible to make projections into the 1990-2015 period with any confidence. Nevertheless, it may be in order to suggest some possible ways in which management may react to deregulation over time, and to mention some possible structural changes for the industry.

3.2.2.1 Rates and Load Factors

An air carrier serving a given route and seeking to maximize profit may control several variables. The most important are price and capacity. Capacity includes not only the size of aircraft but also the number (frequency) and scheduling of flights. Insofar as frequency and scheduling are the most important determinants of shipping delay (elapsed time from when a package is ready to leave the shipper until its arrival at the consignee's loading dock), capacity is the most useful measurable proxy for "quality of service." To the potential customer for air freight, time has a value; he will use air cargo services to an extent determined by both the cost of the service to him and the quality (primarily speed) of the service he receives.

In the past carriers had extremely limited freedom (if any) to set rates; thus, adjustments in capacity offered were a principal management tool. This phenomenon has been closely studied in the case of passenger traffic (ref. 14, 15). These passenger market studies found that under CAB regulation, carriers tried to adjust their profit levels in a given market by adjusting capacity offered. If they enjoyed high load factors, they would tend to expand capacity, increasing quality of service (decreasing the average delay experienced by passengers) so as to attract more passengers. This increased traffic, but it also tended to decrease the average load factor, and thus increase cost per passenger carried. Each carrier, of course, sought to maximize total profit. Similarly, in a market with low load factors, the carrier would try to decrease capacity, decreasing traffic but increasing the load factor and thus decreasing cost-per-passenger. All this was done in the context of fixed price per passenger.

The studies argued that the prices actually fixed were not maximally efficient. In view of the costs of passenger time and availability of competing modes, passenger load factors should be greater in long-distance than in short-distance markets, and greater in dense markets than in sparse markets. In the early 1970's, the opposite was true in practice. Thus they urged that prices be cut in the longer and denser markets. If this did not adequately increase demand, it would lead to pressure on carriers to decrease supply, but in either case, it would increase load factors.

Shortly after these studies were published, the CAB did in fact move to increase load factors in these markets, but in a very different fashion. Under the banner of fuel conservation, it encouraged competing carriers to agree to limit capacity in selected markets without cutting prices.

In 1977-78, while passenger rates were not deregulated by statute, the CAB allowed carriers consiberable flexibility in reducing rates (via promotional fares), and the carriers were quick to take advantage of this. This would seem to demonstrate a serious interest on the part of the carriers in (a) determining price elasticity of demand more accurately than was possible under strict regulation, and (b) determining feasibility of carrying out in practice several price separations long advocated by the theoretical economists, e.g., charging more for certainty of scheduling (a reserved seat as opposed to a reduced standby fare), preferred hours (reduced off-hour and weekend fares), and schedule flexibility (reduced rates for 7-day or 30-day advance reservations.

The attempt to separate passenger markets by special fare programs is consistent with past evidence in the cargo category. The small-package services of the major airlines is an attempt to price separately for a distinct market segment, as are the lower ("daylight") rates for cargo carried in passenger aircraft bellies. The success of Federal Express shows that an entire network can operate on a single one of these markets in some cases.

Typical load factors for cargo in 1976 differed drastically between all-cargo and combination service. All-cargo planes had an average 53 per cent load factor, while cargo space in passenger plane bellies was typically on 26 per cent utilized. Passenger load factors increased fairly rapidly in 1977 and early 1978 as the CAB permitted carriers to introduce the special fare programs; this is evidence that carrier managements agreed with the economists that increasingly differentiated fares and higher load factors were desirable.

3.2.2.2 Future Rates and Load Factors

Therefore, it seems reasonable to suppose that the carriers will continue the process of differentiating markets, introducing special fares to fill available capacity, and regarding fares as being a competitive tool, at least as important as capacity offered. This may be expected to lead to increasingly segmented markets; to a fare taper (with distance) more extreme than before deregulation; and to higher costs for users requiring special services (e.g., shippers of live animals and hazardous materials). It is probable that even if the United States returns before 1990 to a more regulated environment, some of these changes will persist: that is, that the fare structure will be somewhat closer to a competitive-optimum rate structure than it was before 1977.

As demand for all-cargo service grows, it will become increasingly feasible for the air carriers to assign larger aircraft or multiple aircraft to particular markets, thus giving them more leeway in capacity offered than is now possible except in the very largest markets. These changes, as well as fare adjustments, will continue to drive load factors up. On the other hand, load factors in scheduled service tend to be limited since there must be reserve capacity for busy days or seasons. It seems most likely that load factors in common carrier service in the 1990's will be about 65 per cent on the average, somewhat lower in sparse markets and short-range markets (where frequent service is necessary to compete with trucks) and somewhat higher in dense markets and long-range markets. Charter operators and special market segment operators (e.g., Federal Express) who are more able to adjust levels of service to actual demand, on a single-flight or day-to-day basis, should also enjoy somewhat higher load factors than average.

A problem is presented by certain relatively small and high-cost operations where active competition is unlikely. For instance, it appears that the CAB is presently unwilling to see live-animal carriage dropped. Can it allow prices to rise without eventually causing the service to essentially cease due to lack of demand at the high prices? What about regular service between a small outlying city and the appropriate hub? Where there is a single carrier in such a market, will fear of competition keep the price at a reasonable level, or might the market be so small that this is unlikely? It appears probable that a mechanism will be found to continue regulation in these areas: for instance, by asserting that in some circumstances carrying live animals or hazardous materials is necessary to providing a "minimum level" of service, or by declaring excessively high rates to be "predatory." Competition and the increased efficiency of higher load factors will in all probability keep the overall level of air freight rates from rising faster than inflation. It may be reasonable to conjecture (based on the reasoning in the Domestic Air Freight Rates Investigation, even though as a formal precedent it is obsolete) that rates in smaller markets will be kept in about 130 per cent of the rate in a similar competitive market.

In an air cargo industy with unregulated rates, certain problems arise that are not present in a regulated market. On the one hand, rates for a given

commodity on a given route may in fact become fixed by competition: several carriers charging essentially identical rates with a change in rate by one typically met by the others. There will then be various arguments either that this violates the anti-trust laws, or that it should be formalized and exempted from the antitrust laws (for instance, in order to "stabilize" the industry, or to make fare changes more predictable for shippers, or to increase load factors and reduce fuel consumption). Alternatively, there may be a large variety of rates and terms of shipment offered by various carriers (a situation not unlike that prevailing with cut-rate air passenger fares in mid-1978). The next few sections discuss some possible changes in the market structure in these circumstances.

3.2.2.3 Rate Bureaus

Several of the transportation modes in the U.S. engage in collective rate-making practices through organizations known as rate bureaus. Rate bureaus are not permitted in the U.S. domestic airline industry; however, IATA functions as a rate bureau. Given a significant increase in air cargo transportation under an advanced air cargo system, the establishment of rate bureaus in the air transportation industry might be considered. The following paragraphs discuss the history and functions of rate bureaus in surface transportation and the implications for rate bureaus in air cargo transportation.

History and Functions of Rate Bureaus

Rate bureaus are nonprofit, carrier-maintained organizations that are legally permitted to initiate joint carrier pricing action (ref. 4, p. 171). In rate bureaus, rate proposals may be filed by shippers, consignees, bureau members, other carriers or by the bureau's standing rate committee. After a proposal has been filed, a public hearing may be held at which all interested parties have the opportunity to make their views known. In addition to their collective rate-making function, rate bureaus also perform the following functions: disseminate information on regulatory changes, publish rates, and provide carriers a forum for discussing problems of mutual concern. Rate bureaus are found in the railroad, the trucking, and the domestic water carrier industries, and membership in a particular bureau is restricted to carriers of a single mode.

In the past, rate bureaus were generally regarded by carriers and shippers as desirable mechanisms for maintaining stability and fairness in rate-making practices. However, as part of the current movement toward transportation deregulation in the U.S., rate bureaus have increasingly come under attack by shippers (ref. 16). The main complaint of many shippers is that rate bureaus provide too little consultation with shippers in rate-making procedures. In addition, some shippers, particularly smaller ones, would prefer to have more individual bargaining rights with carriers. In fact, the effect of a provision in the Railroad Revitalization and Regulatory Reform Act of 1973 will allow individual bargaining between shippers and some railroads.

Implications for Rate Bureaus in the Air Transportation Industry

Rate bureaus might be considered in air cargo transportation on two levels: (1) domestic air cargo transportation, and (2) international air cargo transportation.

In the domestic case, rate bureaus were established during the early days of rail and motor carrier transportation and it is tempting to suggest that rate bureaus might also be established in a developing air cargo industry. However, given the airline deregulation movement and the wishes of many shippers for more individual bargaining rights with carriers, it is unlikely that rate bureaus will be established. Only if deregulation should result in very unfavorable conditions for shippers and carriers over an extended period of time would the establishment of rate bureaus become a serious possibility.

Internationally, IATA is a global rate bureau which represents more than 100 airlines. IATA divides the world into traffic conferences, and airlines operating within or between these conferences periodically meet and agree on rates. The rates are then filed with the governments involved for approval. Conference meetings are not open to the public or users of airline services. IATA has not been particularly effective in its rate-making functions, but it does serve as a forum for the international airline industry and has provided a certain degree of stability in the industry. Thus, it is likely that IATA will continue its past functions, although the relationship of its members may vary from time to time (see the discussion of the changing role of U.S. airlines in IATA in section 3.1.2).

3.2.2.4 The Travel Agent Function

There are two types of middlemen in today's airline industry. In the cargo sector, the air freight forwarder serves as a middleman between shipper and air carrier. On the passenger side, there is the travel agent who makes arrangements for the passenger with an air carrier. The two functions are basically different in nature. The forwarder accepts packages from the customer-shipper, and then as a shipper purchases air carriage for the shipment, making a profit by charging one rate to the customer and then paying a lower rate to the air carrier (for instance, by obtaining a quantity rate or using charter services). Travel agents, on the other hand, sell air transportation to passengers, but in an agent capacity to the air carrier. The agents are remunerated by a commission on tickets sold. This section explores the possibility of the travel agent function applied to air cargo.

The growth of air passenger traffic has been considerably assisted by the relationship between the airlines and travel agents. The travel agent provides the public with services including consultations about available rates, routes, and schedules as well as the actual writing of tickets, performing functions which if they had to be performed directly by the airlines would require substantial additional personnel costs. The agent attracts the public not only by offering services that could be offered by an air carrier in the usual course of business, but by offering other services, by his ability to appear neutral as between carriers, and by promoting demand for service not supplied

by one single carrier (e.g., trips which require that different portions be flown on different carriers).

The creation of travel agents, or commission sales agents, for the transportation of cargo might have extremely beneficial results. One reason that the growth of air cargo has not kept pace with some expectations is probably the lack of effective selling. While salesmen employed by air carriers and air freight forwarders have been able to call on the largest potential customers in cities where there is significant traffic, they have not been able to call on relatively small customers, or even on mid-size customers located away from carrier/forwarder offices or whose transportation needs will require a larger mix of suppliers. The commission agent able to represent a large variety of companies will have substantial incentive to make such calls. Further, since a great many shipping decisions are in practice made by blue-collar employees--shipping clerks or shipping managers who are not motivated to devote time to comparative studies of competing modes or carriers--such salesmen might find a ready audience.

There is one other strong argument for the creation of a freight equivalent of travel agents. If such commission agents could function, and if arrangements could be made for them to represent not only various air carriers (and possibly forwarders) but also companies providing other modes of transportation, they could be a significant force in establishing an intermodal transportation industry. They could provide a customer with a single source of information about several ways of getting a shipment to its destination, and even provide the waybill(s) for a trip involving several modes and carriers.

It should be noted that many in the industry argue that the role of travel agents is dependent not only on the existence of regulations permitting air carriers to pay commissions to non-employees who sell tickets, but also on a specific antitrust exemption which permits the air carriers and agents to agree on a uniform fixed commission system. It has been argued that in the absence of the uniform system, one carrier could try to induce agents to direct passengers to it by raising commission rates, leading to a competitive spiral and eventual increase in fares. While it seems very probably that the CAB will eventually permit the paying of commissions, it seems highly unlikely in the present climate that the antitrust exemption will be forthcoming.

The argument that an antitrust exemption and fixed uniform commissions are necessary is not wholly convincing. While much of the stock brokerage industry developed on a fixed commission rate system, competitive commissions have been allowed more recently (of course, here the commission is paid by the retail customer). The real estate brokerage business has also functioned without an antitrust exemption. Finally, there is some experience with competition even in the presently-constituted air passenger travel agent business; an agent is paid a percentage commission which is reduced if the agent finds a way to make travel cheaper for the passenger (e.g., a lower fare); the pressure on the agent to do a good job for the retail customer is thus not in terms of immediate reward but in terms of return business. Presumably, travel agents do try to seek low fares for their customers when available, rather than trying to maximize their commission per transaction.

Even accepting the desirability of the freight travel agent function, many questions remain. Should this function be performed by an air freight forwarder? It has been argued that there is a significant conflict of interest between the forwarding and travel agent functions. (Some of the issues were touched on in a speech made by Chairman Kahn of the CAB to the Air Freight Forwarders of America on July 2, 1978). A forwarder thrives by selling his own service which uses those of others, while a travel agent exists by selling the services of others for whom he is an agent. The tension between being, in effect, a shipper in the former case and a carrier's agent in the latter creates an essential conflict of interest. The best solution to this problem may be separate the two functions, with competition between forwarders and travel agents. Present forwarders might even choose to switch over to the travel agent function, instead of continuing as forwarders. This question may well be settled by the CAB during 1978, at least for the near future.

How effectively could or would the agent serve as a package tracer? Obviously it would be beneficial to give the shipper or consignee a single contact point with problems about damage, delay in shipment, etc.; this is not a traditional travel agent function, but there might be considerable benefit to the carriers as well as the shipper in having at least the more routine inquiries processed through an agent, who would be more likely to know who to call and what to ask than a relatively small individual shipper (especially on an intermodal shipment).

3.3 Intermodal Relationships

3.3.1 The Current Regulatory Situation

Intermodal transportation involves the transfer of a shipment from one mode to another as it moves from origin to destination. Although intermodal transportation is not a new concept, technology is presently available which greatly facilitates intermodal transportation and results in greater transportation efficiency. Intermodal transportation will be a necessary part of an air cargo system, and the technical aspects of intermodal operations in the ACIS are discussed in other sections of this report. There exists, however, in the areas of transportation management and government policy toward transportation, barriers which prevent the most efficient intermodal transportation that is technically possible.

Intermodal cargo transportation utilizing air carriage as the primary or secondary mode is an established fact. A series of regulatory compromises and relaxations between the CAB on one hand, and the ICC or FMC on the other, have promoted the growth of intermodal service involving air carriage. While regulation remains a barrier in certain respects, the range of intermodal service possibilities is broad, and many exist in practice. This section outlines the present situation in air cargo intermodality, the purpose being to lay a foundation for discussion of needed changes.

3.3.1.1 Air Carrier Service

Air carriers provide intermodal service utilizing motor carriage under a variety of arrangements. For many years, air carriers have provided pick-up and delivery service by motor carriers within a limited area surrounding the airport served. Some air carriers operate this service themselves while others provide it through their jointly wholly owned subsidiary, Air Cargo, Inc. These pick-up and delivery services must be performed within the "air terminal area," defined generally as a 25-mile radius around the airport served by the carrier. Such motor carriage being "incidental" to air carriage is exempt from ICC regulation, and comes under CAB authority as a service "in connection" with air carriage.

Another air/motor arrangement is "motor-substitute-for-air" carriage. Under this arrangement, an air carrier substitutes truck transportation for existing transportation by aircraft as a connecting service between two points which it serves. The motor carriage stands in the place of an actual airline flight between the airports at these points. The air carrier assumes full one carrier responsibility for the movement which is performed by an underlying ICC regulation motor carrier. All air carriers must obtain permission from CAB for this service, and tariffs must be filed as with any air service route. This includes all-cargo carriers operating under section 418 since there is currently a question as to what degree that section deregulated ground carriage by all-cargo carriers. The major difficulty with the new section is that because the Board cannot restrict the points to be served, all-cargo carriers, unless regulated, could substitute motor for air carriage at numerous new points and, therefore, get heavily involved in trucking operations. Such

action would run contrary to the original purpose of this service which was to relieve air carriers from the expense of flying aircraft for mere connecting service. The Board is presently reviewing its authority in this matter.

Another air/motor service in widespread use is a contract arrangement between an air carrier and an ICC regulated motor carrier for connecting service. The ICC motor carrier provides line-haul and/or pick-up and delivery services beyond the 25 mile radius of the air terminal area. A variety of through service arangements are possible, but the trend is toward one carrier responsibility utilizing a single bill of lading. It should be noted that similar arrangements are possible between air carriers and ICC rail or water carriers, although air/rail and air/water services are practically non-existent.

Air carriers have offered an intermodal service in conjunction with FMC regulated ocean-going carriers. An example of this is the Sea Tiger service managed by Flying Tiger. The primary reason for this air/sea service is to connect ocean cargo commerce between the Orient and Europe via air transportation across the continental United States. By using air cargo service between western and eastern ports in the United States, the long ocean voyage through the Panama Canal or around the tip of South America is eliminated, saving both time and money. Air/sea service has also been expanded to include shipments originating at or destined to points within the United States. The 1977 deregulation enactment accompanied by subsequent CAB action has given all-cargo carriers a great deal of latitude in such arrangements. However, FMC regulation over its carriers remains strong. Moreover, much of oceanic shipping is governed directly by laws of Congress so that the FMC has little discretion even when it wishes to institute change. The upshot is that ocean-going carriers do not have the same flexibility to reach compromise arrangements as do air carriers.

3.3.1.2 Air Freight Forwarders

Forwarding is not really a mode, but a service which uses modes. Air freight forwarders are users of the air mode, although some of them also offer pick-up and delivery service by truck incidental to the use of the air model. Forwarders may conduct their own pick-up and delivery service within a 25-mile radius of either the airport or the limits of the city served by the airport, depending on the base of operation they use. Forwarders wishing to provide pick-up and delivery service beyond this 25-mile radius must utilize an ICC regulated carrier for that service. The Federal Aviation Act prohibits air freight forwarders from establishing joint rates (including liability) with ICC carriers, to separate carrier responsibility is required for such service. However, the ICC recently granted some air freight forwarders a way around this barrier to one carrier responsibility beyond the 25-mile limit. These forwarders were licensed by the ICC as "subsequent or prior" carriers to carriage by aircraft with a limitation that the carriage must be performed by an underlying ICC motor carrier. This arrangement avoids the prohibition of the Act because the forwarder is then both a CAB and ICC carrier, but contracts with the underlying ICC carrier only in its ICC role.

Air freight forwarders may use ICC carriers as a substitute for long-haul carriage by aircraft, but only where an emergency exists beyond the control of the air carrier used by the forwarder. The motor-for-air substitution must be at the forwarder's expense, and the shipment will travel under an air bill of lading.

Under the Long-Haul Motor/Railroad Carrier Air Freight Forwarder Authority Case, the CAB has granted ICC motor and rail carriers virtual free entry into the air freight forwarding market (ref. 17). The only significant stipulation was that the CAB would only grant such authority for ten-year periods, with renewal possible. This action should facilitate intermodal coordination between air, motor, and rail modes.

3.3.1.3 Bill of Lading

The bill of lading is the receipt for possession and the contract of carraige of goods in shipment. It is a document necessary to all common carriage. Existing intermodal through services use either single or multiple bills of lading. The deciding factor as to the documentation procedure used in a given intermodal through service is the liability contract arrangement within that service. Liability may be stated in terms of one carrier responsibility, joint carrier responsibility, or multiple-but-separate carrier responsibility. Under the first of these liability arrangements, one carrier contracts with the shipper to be responsible for the entire movement which utilizes at lease one connecting carrier acting as an agent for the principle carrier. Joint liability occurs when two or more carriers contract together with the shipper such that each of them is responsible for the entire through movememt. Both of these liability arrangements permit the use of a single bill of lading because a single liability is common to the entire through movement. However, where multiple carriers cannot establish such a single liability, separate bills of lading are required to establish each carrier's responsibility for its part of the entire movement. In this situation multiple bills of lading are necessary, multiplying documentation and often resulting in confusion and delay. Regulatory changes are needed to facilitate the use of the single bill of lading as a simplified documentation procedure.

The major regulatory barrier is the existence of differing liability requirements among the transportation agencies for the carriage of the same type of goods. Differing liability among carriers in an intermodal through movement necessitates multiple bills of lading. The authority of the agencies to regulate liability is enumerated in various acts, with great variations of authority existing between each agency. CAB all-cargo carriers now have a great degree of flexibility in setting their liability, but ICC and FMC carriers are still strictly regulated in this regard. The difference in liability valuation by granting a reduction in carriage rate. These limitations vary with the value of the commodity involved. FMC ocean carriers in international commerce between U.S. and foreign points, or vice versa, may limit their liability valuation under COGSA (ref. 18), but not below $500 per unit, and only after meeting certain conditions. Problems have resulted as to exactly what constitutes a "unit" in any given ocean shipment. A "unit" may be based on the commodity or how that commodity is packaged.

In addition to the valuation of liability, the cause of liability is significant. While carriers cannot exempt themselves from liability for their own negligence, they may exempt themselves from other causes beyond their control. However, the hazards and perils peculiar to each mode often differ, creating differences in the scope of their liability, as formulated by acts of Congress and regulatory or judicial decisions.

Closely related to this jungle of liability standards are differing insurance requirements among the agencies. The insurance requirements are usually based on assumed liability and, therefore, present as many problems as the liability differences.

Another problem related to liability results from differing commodity codes among the agencies. Since liability is usually calculated in terms of these commodity codes, if a particular commodity is classified differently by each agency, the liability will usually differ as well.

Up to now, the single bill of lading for intermodal through service using carriers regulated by different agencies has only been possible through unilateral and multilateral agency actions permitting a common liability. Either one agency will exempt its carrier from that agency's requirement, or two agencies will take compatible actions so that a common liability can be achieved among carriers. This is a cumbersome and inefficient process which needs replacement.

Congressional action is necessary to clear the way for increased use of the single bill of lading in intermodal through service. The present regulatory agencies can compromise only so far on liability before reaching their statutory limit of authority in this regard. As suggested later in this report, a single intermodal regulatory agency is needed. In creating this new agency, Congress should consolidate and rework present liability statutes and regulations to meet the concerns of shippers and carriers alike. This radical action will involve changing traditional concepts of liability which are deeply rooted. Congress should pass legislation letting out the basic requirements for common liability including a common unit for valuation of liability, a common list of exemptions from liability and common insurance requirements. The legislation should delegate to the new agency the authority to set the minimum value of liability based on the common unit. If this authority is delegated, the minimum value can be adjusted to meet particular needs, unlike a fixed limit set by Congress. At the same time, this delegation will put the minimum value decision out of the judicial branch, where the enforcement of minimum levels under the common law had been ineffective in the past. However, the courts will maintain an active role in enforcing carrier and agency compliance with the basic concepts of the new act.

While reasons exist for liability differentials between modes, much of the present division is a result of separate development of the modes with each attempting to establish the best liability for its own mode. It is time for a compromise that will allow the use of a single bill of lading in intermodal through service and thereby benefit the entire carrier industry.

3.3.2 Common Ownership

Intermodal common ownership is the ownership of two or more modes of common carriage by the same legal entity. There are three basic types of intermodal common ownership. One type is the multi-modal corporation in which the modes are brought together in a single corporate entity operating under one management. Multi-modal corporations can occur through the merger or consolidation of corporations operating different modes, or when a single-modal corporation initiates operations in another mode. A second type of intermodal common ownership exists when a corporation operating one mode purchases controlling interest in the stock of a corporation operating another mode. This arrangement is commonly called a "parent-subsidiary" relationship. The final type of intermodal common ownership exists when a single person acquires a controlling interest in the stock of different corporations operating different modes. The corporations remain separate legal entities, but they share a common owner.

Although not of itself constituting intermodal common ownership, a significant method of intermodal common control exists where one person holds directorships in two corporations operating different modes. Such an "interlocking relationship" also occurs when a controlling stockholder of a corporation operating one mode (or his representative) holds a directorship in a corporation operating another mode.

3.3.2.1 Anti-trust

A major issue of concern in examining common ownership is whether or not it may violate anti-trust laws. In the United States, Anti-trust control is exercised under two separate schemes. One method utilizes the so-called "anti-trust laws" which are embodied primarily in the Sherman and Clayton Acts, and are enforced by the Justice Department and the courts. The other method grants anti-trust control into the regulatory agencies. Congress decided that these agencies were better equipped and qualified than the courts to rule on anti-trust matters concerning the regulated industries. Thus, by act of Congress, the CAB, ICC, and FMC have been delegated anti-trust authority over their respective carriers.

Under the Federal Aviation Act, the CAB has the duty to approve or disapprove mergers, consolidations, and acquisitions of control (section 408), interlocking relationships (section 409), and pooling or other agreements (section 412) by utilizing anti-trust concepts. The decisions of the Board under those sections expressly immunize the carriers involved from the anti-trust laws. This authority of the CAB not only extends to arrangements between its own carriers, but also to arrangements between CAB carriers and ICC or FMC regulated carriers. The ICC holds similar authority over its carriers, but unlike the CAB, its authority only extends to arrangements between the carriers it regulates. This same qualification applies to FMC anti-trust regulation. The result of these gaps in ICC and FMC anti-trust control is that any ICC-FMC carrier arrangements are subject to judicial review under the anti-trust laws.

3.3.2.2 All-cargo Carriers

Acting under its exemption power in section 418, the CAB recently exempted all-cargo carriers from the anti-trust sections (408, 409, 412) of the Act. The Board specified that its order was not an order under the anti-trust immunity section, 414. Thus, all-cargo carriers are now subject to judicial review under the anti-trust laws. Although the anti-trust laws will have to be tested, in theory these carriers are now free to establish common ownership or control arrangements with air freight forwarders, other air carriers, and carriers of the other modes without CAB approval. They may purchase other carriers and, thus, acquire the operating authority of those carriers. As the ICC and FMC can only control common arrangements made among their own carriers, respectively, all-cargo carriers do not need the approval of thos agencies to establish common ownership or control with the carriers regulated by those agencies.

3.3.2.3 Air Freight Forwarders

The CAB has proposed an extensive deregulation measure with respect to air freight forwarders. Air freight forwarders will be relieved from CAB anti-trust review but made subject to the anti-trust laws the same as all-cargo carriers. Thus air freight forwarders will have the same freedom to establish common ownership and control arrangements with air carriers or other common carriers. A specific provision will allow any air carrier to acquire an air freight forwarder free from CAB anti-trust review. Should these proposed rules not be approved air freight forwarders may still apply to become all-cargo carriers under section 418 and be entitled to all of the exemptions allowed such carriers.

3.3.2.4 ICC and FMC Carriers as Air Carriers

Prior to the 1977 deregulation enactment, ICC and FMC carriers were effectively, though not expressly, prohibited from owning air carriers. Motivated by fears that "takeover" by other modes would destroy the airline industry, the CAB has never found under section 408 that an ICC or FMC carrier could "use aircraft to public advantage in its operations and (would) not restrain competition." Thus, with the exception of a few railroads who owned air carriers prior to the 1938 Act and were "grandfathered" thereunder, the Board has not allowed carriers of other modes to own air carriers. Moreover, the CAB could prevent these carriers from starting their own air operations because it could find under section 401 that such service was not of "public convenience and necessity."

Now, because of section 418, as long as an ICC or FMC common carrier is "fit, willing, and able," it may become an all-cargo carrier. Having achieved all-cargo air service authority, these carriers may enter service either by creating their own new air operations or by acquiring an existing air carrier under the exemptions from CAB anti-trust review.

3.3.2.5 Barriers

Despite the removal of most CAB regulatory barriers to intermodal common ownership, the anti-trust laws and the regulations of other agencies still

create substantial barriers. Now that common ownership or control arrangements involving all-cargo carriers are subject to the anti-trust laws, the courts have the power of review over such arrangements. It is impossible to predict with any certainty what type of arrangements the courts will permit as judicial review under the anti-trust laws turns on the facts and circumstances of each case. Whether judicial anti-trust review will be more or less strict than the previous CAB review is unknown. Yet, the courts should take a more objective approach than has the CAB because they do not share the Board's pro-air carrier bias.

Even where the anti-trust laws, if tested in court, would permit common ownership or control, the legal costs involved in researching the anti-trust implications are often so high as to deter the owner of a mode from embarking on such ventures. It is the fear of anti-trust and not the anti-trust laws themselves which form the barrier.

Legal costs also come into play in an air carriers decision to seek ICC authority to start a trucking service. Approval for trucking routes is granted on a point-by-point, route-by-route, and case-by-case basis, causing the legal costs to run high. Air carriers are, thus, indirectly deterred by ICC regulation from seeking trucking authority.

Many other barriers to intermodal common ownership or control exist such as separate traditions within each mode, lack of imagination, the overall cost of such ventures. Yet it might be argued that the complexities and uncertainties inherent in regulations pose more barriers than the substance of the regulations themselves.

3.3.3 Managerial and Policy Implications

Transportation regulations were usually established in response to problems within a particular mode. Each mode became subject to a regulatory mechanism which was responsible only for that mode and which was intended to resolve specific problems. This *ad hoc* approach to transportation regulation, though perhaps appropriate at times, has resulted in each mode's development into a separate system within the total transportation system. The different modes are often in competition with each other. Intermodel competition has often been regarded as desirable on the grounds that more competition (inter- as well as intra-modal) will ultimately benefit the consumer. Criticisms of the current transportation arrangement are levied at the unnecessary duplication of service resulting from intermodal competition, the lack of coordination among the different modes, and the promotion and protection of each mode by its regulators, which, the critics argue, hinders the attainment of an efficient, integrated system.

From a regulatory standpoint there are various policy alternatives to accomplish efficient intermodal transportation: (1) voluntary agreements among carriers in different modes to provide intermodal transfers, (2) government enforcement of intermodal coordination, and (3) development of regulations which would permit companies to operated in several modes (integrated or multimodal transportation companies). Each of these alternatives is discussed in the following sections.

3.3.3.1 Voluntary Cooperation Among Carriers in Differnt Modes

Under current national transportation policies voluntary cooperation is the way in which much of the intermodal transportation takes place. These agreements are subject to the approval of the regulatory agencies concerned. There are limitations to the success of intermodal transportation through voluntary cooperation of different modes. If one accepts the economic assumption that each firm will maximize profits, it follows that when firms in different modes must interact in transporting a shipment, each carrier will handle the shipment such that the shipment produces the maximum benefit to his own firm (e.g., will try to keep the shipment on his segment of the journey as long as it is profitable for him to do so). This may not be in the best interest of the shipper. Other problems in voluntary cooperation arise from different managerial practices among firms and differences in regulations of the various modes. Management practices such as pricing policies and accounting procedures, as well as incompatible physical facilities at interfaces, may cause impediments to smooth intermodal transfers. In the negotiation of mergers which involve firms within the same industry, the integration of the management structures of the merging firms poses many problems and often determines the success or failure of the merger. Thus, attempting to coordinate these factors among independent firms of different modes is even more difficult. Government regulations which focus attention on separate modes of transportation also complicate intermodal transportation.

The form of intermodal transportation which is most important in an air cargo transport system is the air/truck combination. It is also in the interaction between these two modes that examples of inefficiencies resulting from regulatory policies can be seen. Inefficiencies have resulted from the different freight rate structures for air freight and motor carrier freight as had been established by the CAB and ICC, respectively. (Under the newly enacted air cargo deregulation legislation the CAB has far less authority in regulating rates). Shippers and forwarders have argued that the 25-mile rule prevents the forwarder from offering the best possible service to shippers located outside the zone (ref. 19, p. 67).

Progress has been made recently in facilitating voluntary agreements among carriers of different modes. This is largely due to the recognition of the efficiency of properly executed intermodal transportation and its importance in an energy conscious society. The precedent has been set for a single waybill in air cargo (see section 3.3.1.3). The CAB recently granted Trans World Airlines permission to truck air freight between Milwaukee and Chicago at air freight rates (ref. 20). This decision opens up issues concerning the role of motor trucks or other surface carriers in air cargo service. Investigations are underway which examine the possibility of expanding the 25-mile exempt zone. Changes in all of these areas will lead to improvements in intermodal transportation.

Through cooperation of the regulatory agencies involved, more efficient intermodal transportation through voluntary agreement among modes can be encouraged. It appears this is the current trend. It must be noted that even

with fewer regulatory barriers to voluntary cooperation, the problems associated with coordinating policies of different firms still exist.

3.3.3.2 Government Enforcement of Intermodal Coordination

Current trends in government policies indicate that regulatory agencies are working toward facilitation of voluntary coordination among carriers of different modes. Even under an extensive porgram of voluntary agreements some problems would still exist in achieving intermodal transportation. The different modes would still remain competitors and in pursuing the best interests of their firms might not necessarily act in the best interest of the shippers. Problems would also result from different management policies of the firms involved. A way of resolving these problems would be to implement government regulations which would establish standards for uniform technical characteristics and financial procedures. But changes in the governmental regulatory structure would be required.

Although the functions of the Department of Transportation include the formulation of a national transportation policy and the encouragement of transportation coordination, the department exercises no regulatory powers over the various transportation modes except in safety matters (ref. 20 p. 275). The Secretary of Transportation cannot dictate policy to the various regulatory agencies which are responsible for carrying out the provisions and policies of the regulatory statutes which govern them. An important step in reorganizing the regulatory structure would be the formulation of a national transportation policy, emphasizing a coordinated transportation system. It would still be necessary to have agencies which would provide some regulatory control over certain areas of transportation. However, the agencies would be divisions of a larger organization, would be subservient to the overall policy of transportation coordination, and would be divided functionally rather than according to mode. Regulation of safety matters in the different modes would be one definite area of regulation. Other possibilities might include agencies which monitor intermodal transfers and joint rates.

The advantage of such an organization is that there would be an overall policy which would enhance coordination of the nation's transportation modes. However, the organization would be subject to the problems inherent in any bureaucracy. The extent to which the large agency would become involved in regulation is subject to the arguments for and against government regulation. Rigid regulations for some of the above-mentioned areas are not in line with the current movement toward deregulation in transportation. The regulatory agencies comprising the divisions of the larger organization should serve the function of monitoring, rather than regulating, economic aspects such as rates and routes, providing guidelines for intermodal transfer, and enforcing safety standards in the various modes.

Yet, regardless of whether a voluntary or government managed approach urged greater intermodality, the major hinderance would still be an institutional one, i.e., altering those established practices and procedures of the different elements of the industry. The problem that arises is not as much how to develop a common set of rates and documentation procedures or deciding what regulations would have to be altered to achieve that end, but how

the system could be made to accept it. The shippers and handlers would have to be convinced that their existing procedures needed to be altered. This could be accomplished by either government fiat or voluntarily.

A direct government mandate requiring a standarized method of handling freight documentation would seem the most effective method of implementing such a change but this is unlikely in the United States. The fractionalized nature of the industry as well as the limited nature of government involvement makes it unlikely that, other than for an extreme emergency or crisis situation, the government would try to impose such a change. It would require a coordinated effort of the Congress, the Executive and the regulatory agencies, along with the tacit support of the industry.

It is more probable that a gradual and voluntary movement under the direction and guidance of the regulatory agencies would be the most realistic method of implementation. But even at that it would still require the coordination of the ICC, CAB, FMC and the Department of Transportation to first develop the procedures that would result in a single way bill and standarized documentation. Even though such a change would probably be the single most significant contribution to the eventual development of an intermodal transportation system, since it is not very urgent or critical there is not going to be a great deal of interest in it. Most shippers, handlers, and regulatory officials are concerned with more urgent and pressing needs and have little time or interest in changes that would have long term payoffs. The inherent tendency of organizations is to alter procedures only when it is required or when it is viewed as directly beneficial. Although standardization of procedures would undoubtedly benefit the freight industry as a whole it would be difficult to measure the immediate and direct benefits to any single mode of transportation and even more difficult to measure any benefits to any single element in a mode. Therefore, such institutional restraints are a very real barrier to developing an intermodal freight service.

3.3.3.3 Multi-modal Transportation Companies

The two previous sections discussed means of attaining transportation coordination through active government participation. There are those who advocate the formation of multi-modal transportation companies as a way of facilitating intermodal transportation without involving the government to such a great extent in business operations. A multi-modal transportation company is a single corporate entity which combines several forms of for-hire transportation. The terms, "intermodal ownership," "integrated transportation companies," and "vertical integration," are synonymous with multi-modal companies.

Federal transportation policies tend to restrict the formation of multi-modal companies. As usual, there are strong arguments for and against multi-modal companies. Several references present potential advantages and disadvantages of common ownership. The following arguments, pro and con, are taken from Suelflow and Hille (ref. 22) and Lieb (ref. 23).

Arguments in Favor of intermodal ownership

1. According to those who favor common ownership the greatest advantage of multi-modal transportation companies would result from the ideas of a single corporate entity. With one organization in charge of the administration of several modes, intermodal transfer would be facilitated, a single pricing policy could be implemented, and the best possible comination of services utilizing different modes could be offered to the shipper. Competition could still be assured, since there would be many multi-modal companies offering such services.

2. Common ownership of several modes would strengthen the nation's common carrier system by making maximum use of each mode. Inequalities which now exist among modes, including user charges and subsidies, would be removed.

3. The shipper would find it advantageous to have his transportation needs filled by one company. The appropriate combination of modes could readily be provided, and the same carrier would also be responsible for any loss and damage claims.

4. Long-run economies of scale resulting from common ownership would result in cost economics. lower and more stable rates, and more expeditious handling of LCL shipments.

Arguments Against Intermodal Ownership

1. Some of the arguments opposing multi-modal companies are based on the concern that railroads would eventually dominate the transportation system. According to these arguments railroads would be most interested in promoting rail service due to their heavy sunk investment and would phase other modes out of existence.

2. Destructive competition between the transport companies and the small independents of various modes would result in elimination of the independents.

3. The management of multi-modal companies would find it difficult to operate all modes because of differences in economic structure. The consequence would be that each mode would be organized as a separate operating entity and there would be little opportunity to spread overhead costs.

4. Multi-modal ownership would stifle the development of the newer forms of transportation.

5. While advocates of common ownership argue that common ownership will improve competition, lower rates, and improve service, opponents of common ownership maintain that multi-modal companies would result in a transportation monopoly, higher rates, and a deterioration of service.

Most of the arguments against common ownership reflect the concern over concentration of power by one mode. The most severe restrictions of common ownership are placed on the railroads and originated during a time when railroads dominated other modes of transportation. While common ownership among the nonrail modes is not specifically restricted by law, policy interpretation

by the regulatory agencies involved have nevertheless limited the degree to which common ownership may occur. A restriction commonly applied to intermodal ownership operation is that services of one of the modes involved must be auxiliary or supplemental (as opposed to parallel) to the operations of the other modes. This has been the interpretation of the CAB in cases involving control of air carriers by surface carriers. While the intent of the restriction has been to prevent predatory competition by a single mode, the effect has been to limit the use of the most appropriate mode for a particular service.

Present day conditions in the transportation industry outdate many of the restrictions against intermodal ownership, particularly in the restrictions directed mainly against railroad domination. A stronger economic balance prevails among the various modes of transportation. Antitrust laws would provide an adequate mechanism for preventing anti-competitive practices. Regulatory agencies would still be required to prevent abuses in the industry from occurring. Therefore, restrictions pertaining to intermodal ownership should be relaxed to permit more flexibility and managerial discretion in the use of different transportation modes.

If intermodal ownership should result in the efficiencies its advocates predict, it is possible that independent carriers and carriers in high-cost modes may not be able to compete effectively with intermodal companies. The alternatives for dealing with carriers who lose business to intermodal companies would depend on the importance attached to maintaining the services of these other carriers and this would be a government policy decision. Government subsidies might be provided for these carriers if it were deemed in the public interest for these carriers to provide transportation services. On the other hand, it might be held that the intermodal system was providing the most efficient service and it would not be in the public interest to artificially sustain the operation of less efficient carriers. These carriers might go out of business or assume different roles in the transportation system.

Intermodal ownership possibilities range from bi-modal operations to total transportation companies which include virtually all modes of transportation. Organizational structure can range from separate operating entities related only through joint stock ownership to single management responsibility for all modes. The various types of intermodal ownership which would be feasible in an air cargo system are discussed in the following sections.

3.3.3.4 Common Ownership in an Air Cargo System

The 1977 air cargo deregulation legislation opens the way for common ownership in the air cargo industry. According to Leister and Stram some legal ambiguities remain, but "PL 95-163 permits, certainly within one year, the option of single ownership of all the organizational entities that are required to offer the shipper the complete door-to-door product with the use of scheduled large aircraft" (ref. 24, p. 6).

The most likely changes in the organizational structure of the air cargo system in the near future will involve motor carriers, freight forwarders, and

the airlines. Trucks provide the flexibility of service which aircraft cannot attain. Trucks are widely used to provide supplemental service in air cargo transport, although the effectiveness with which they are used is limited by inefficient ICC common carrier rulings. The deregulation legislation along with changes in ICC rulings (e.g., expansion of 25-mile exempt zone) would permit inter-modal ownership combinations which would improve the efficiency of air cargo transport. A single corporate entity would be able to provide pickup and delivery service, freight consolidation, and line-haul air transport. Because airlines serve a limited number of routes, a single intermodal company would not be able to provide service to all points required by shippers. Since ideally there will be many intermodal companies, interline agreements such as occur in airline passenger transportation, could be arranged to provide service to a wider range of cities. Another possibility would be a new type of freight forwarder who would arrange the optimum routing for a shipment and receive a commission on the traffic generated for a transportation company. (The functions of this agent are discussed in more detail in Section 3.2.2.4). Such reorganization of the transportation industry would affect the trucking industry and the freight forwarding industry. Some of the potential consequences in these industries are discussed in Section 3.5. The truck/air combination is the most probable next step toward intermodal ownership in air transportation. Other intermodal combinations, such as rail/air and water/air will also undoubtedly be applicable in many cases.

This report deals specifically with the design of an air cargo transport system, and, therefore, intermodality is discussed mainly with reference to air transportation. Given the current sentiment in favor of a coordinated transportation system it must be remembered that air transportation is only one part of a transportation system. There are many who argue that in a coordinated transportation system, the best service can be provided by total transportation companies which potentially could own and operate several modes, one of which might be air. The transportation companies would assume the responsibility of selecting the appropriate combination of modes and the optimum routing of shipments. This would not necessarily result in the elimination of independent carriers or single mode carriers. The services offered by these various carriers would differ in the scope of the service provided and the degree of specilizatic of service offered.

Thus, it is recommended that remaining regulatory and legal restrictions which currently prohibit common ownership of transportation modes be removed. If intermodal ownership is economically feasible and if the resulting service is efficient, this form of transportation organization, possibly including the total transportation company, will exist on its economic merits. Governmental guidelines and anti-trust laws would provide protection against abuses.

3.3.4 International Intermodal Transportation

This report does not deal extensively with regulations concerning international intermodal transportation. The international scene is complicated by varying degrees of political involvement in the transportation industries of different countries. We feel that suggestions pertaining to changes in the national policies of foreign countries are not appropriate in the context of this report. Recommendations are offered for general areas in which changes an

innovations would facilitate international transportation coordination.

International transportation agreements are usually reached through bilateral negotiations or through international transportation organizations such as IATA or ICAO. The international organizations consist of a large number of countries and are usually too unwieldy to reach consensus or make desirable changes in any reasonable length of time. Thus, it is most likely that changes facilitating international intermodal transportation will be attained through bilateral (or possible multilateral) negotiations among governments or among carriers and governments. Emphasis in the following areas will facilitate coordination: development of an international intermodal through bill of lading interchange and pooling of containers, landing rights which would permit aircraft to load or unload cargo on any leg of the flight, negotiations which would permit door-to-door service (such as allowing carriers to operate their own delivery service or use those available to local carriers).

3.4 NOISE CONTROL AND LAND USE

As the use of commercial jet aircraft has grown, there have been increasing efforts by citizens and local governments to restrict or control aircraft noise. Although from the beginning of commercial aviation there has been conflict between localities and the aviation industry over the noise produced by aircraft operations, the present conflict dates from the late 1950's when private air carriers first introduced pure-jet aircraft to the nation's civil airports.

While the noise emitted from jet aircraft measured in decibels,is not necessarily louder, it is of a higher frequency than that of propeller-aircraft. Because of the higher pitch, jet aircraft noise has a disturbing impact at close range. (For a more detailed study, see the 1970 NASA Summer Faculty Program in Engineering Systems Design) (ref. 25). In addition, larger numbers of people are affected by jet noise because of the growth of suburbs around formerly isolated metropolitan airports. Searching for means to protect themselves, those communities have attempted to legislate the abatement of aircraft noise and alternatively have sought injunctive relief against the offending aircraft operations. These local attempts to remedy the noise problem have largely failed because of the current preeminence of federal aviation law.

In addition, the increasing numbers of people who find airports unacceptable as neighbors have made it extremely difficult to find acceptable land for new airport expansion. This failure to find available land, in turn, threatens to seriously hamper the future growth of commercial aviation.

3.4.1 The role of the airport operator

As a preliminary matter to any discussion of regulatory control of airport noise, consideration must be given to the question of which authority is liable for damages suffered by neighboring residents from excessive airport noise. Is it the federal government, the owners of the airplane, or is it the airport owner? In 1962, the question was resolved by the U.S. Supreme Court in Griggs v. Allegheny County (ref. 26).

The court concluded that it was the airport proprietor that was liable to nearby property owners for damages caused to their property by noise from commercial flights when the flights were low enough to constitute the "taking" of an air easement over the property. Essentially, the court reasoned that since the proprietor as a land owner has the ultimate say as to who comes on to the land, he should bear the ultimate burden.

Since Griggs, the real effort towards regulating and reducing airport noise has gotten underway. There has been a sort of balancing out in which the various levels of government have tried to do some regulating but not so much regulating that they are found by the Supreme Court to have the ultimate say, so that Griggs might be overruled and they might become the one saddled with liability (ref. 27, p. 34). Some states have acted affirmatively to

control exposure to aircraft noise through land use control and building design, whereas the FAA, acting to maintain consistency with the Griggs rationale, has avoided assuming responsibility for taking of local noise easements. This may perhaps explain the relative inaction by the federal government in matters connected with airport location and local noise control.

Through enactment of the Federal Aviation Act of 1958, Congress has preempted regulations of aviation; therefore, acts by a state or municipality which are inconsistent with this congressional action are prohibited. The principle of preemption in aviation regulation has been developed in a series of cases primarily involving local governments, which dealt specifically with the question of jurisdiction to regulate aircraft noise. The first two of these, Allegheny Airlines, Inc. v. Village of Cedarhurst (ref. 28), and American Airliens v. Town of Hempstead had arisen near what was initially Idlewild and is now Kennedy Airport; a third case, American Airlines v. City of Audubon Park (ref. 30), came up in Kentucky.

These cases held that the local governments which surround an airport and which do not own that airport cannot by police power regulation, whether by height restrictions, noise restrictions, or hour limitations, impose controls which have the effect of regulating aircraft in flight.

In 1973, the Supreme Court in Burbank v. Lockheed Air Terminal, Inc. (ref. 31) upheld the preemption principle as against a locality which did not own the airport. In subsequent cases, however, it was found that a local government could play a role in cases where it was (in whole or part) the airport proprietor. The combined result of these decisions has been that while common sense requires that exclusive control of airspace allocation be concentrated at the national level, thus, communities are preempted from regulating planes in flight, the task of protecting the local population from aircraft noise, has fallen to the agency, usually the local government, that owns and operates the airfield. Therefore, local proprietors have the power to select an airport site, acquire land, assure compatible land use, and control airport design, scheduling and operations--subject only to Constitutional prohibitions against creation of an undue burden on interstate and foreign commerce, unjust discrimination, and interference with exclusive federal regulatory responsibilities over safety and airspace management.

The most recent case addressing the question of the role of the airport proprietor held that local airport proprietors may impose noise requirements for aircraft landing or taking off at their airports provided the regulations are reasonable and nondiscriminatory (ref. 32).

The restriction that an airport proprietor may not unreasonably burden interstate or foreign commerce has given federal agencies--principally the FAA and its parent, the Department of Transportation--considerable leverage in dealing with individual airport proprietors, even where this leverage is exercised only in a "consulting" process. In its 1976 Aviation Noise Abatement Policy, the FAA suggested a procedure modeled after efforts in Boston and Louisville, whereby an airport proprietor in conjunction with local governments, airport users, citizens, and the FAA would develop noise control plans (ref. 33).

The following outline is an excellent list of most or all steps that can presently be taken at the local level (ref. 33, pp. 55-57).

A. Actions that the airport proprietor can implement directly:

(1) location of engine run-up areas;
(2) time when engine run-up for maintenance can be done;
(3) establishment of landing fees based on aircraft noise emission characteristics or time or day.

B. Actions that the airport proprietor can implement directly if he has authority, or propose to other appropriate local authorities:

(1) plan and control of land use adjacent to the airport by zoning or other appropriate land use controls, such as utility expenditures and the issuance of building permits;
(2) enact building codes which require housing and public building in the vicinity of airports to be appropriately insulated; and
(3) require appropriate notice of airport noise to the purchasers of real estate.

C. Actions that the airport proprietor can implement directly in conjunction with other appropriate local authorities and with financial assistance from the FAA, where appropriate:

(1) acquire land to insure its use for purposes compatible with airport operations;
(2) acquire interests in land, such as easements or air rights, to insure its use for purposes compatible with airport operations;
(3) acquire noise suppressing equipment, construction of physical barriers, and landscape for the purpose of reducing the impact of aircraft noise; and
(4) undertake airport development, such as new runways or extended runways, that would shift noise away from populated areas or reduce the noise impact overly presently impacted areas.

D. Actions that the airport proprietor can propose to FAA for implementation at a specific airport as operational noise control procedures:

(1) a preferential runway use system;
(2) preferential approach and departure flight tracks;
(3) a priority runway use system;
(4) a rotational runway use system;
(5) flight operational procedures such as thrust reduction or maximum climb on takeoff;
(6) higher glide slope angles and glide slope intercept altitudes on approach; and

(7) displaced runway threshold.

E. Actions an airport proprietor can establish, after providing an opportunity to airport users, the general public and to FAA to review and advise:

(1) restrictions on the use of or operations at the airport in a particular time period or by aircraft type, such as:

(a) limiting the number of operations per day of year;
(b) prohibiting operations at certain hours--curfews;
(c) prohibiting operation by a particular type or class of aircraft; and

(2) any combination of the above.

F. Actions an airport proprietor can propose to an airline:

(1) shifting operations to neighboring airports;
(2) rescheduling of operations by aircraft type or time of day.

3.4.2 The federal role

As indicated in the preceeding pages, the FAA can play a significant role in noise management by consulting with local airport proprietors. It also, however, has a major role to play at another level. The FAA began instituting noise abatement procedures in the early 1960's. The first explicit statutory direction to deal with the problem came in 1968 when the Federal Aviation Act of 1958 was amended to enable the agency to institute noise emission standards as an element of the aircraft certification procedure. This statute gave the FAA broad authority to prescribe rules and regulations for the control and abatement of aircraft noise and sonic boom, and required it, in formulating noise abatement regulations, to consider a number of factors, including whether a proposal requirement is consistent with safety and whether it is "economically reasonable, technologically practicable and appropriate for the type of aircraft, aircraft engine, appliance, or certification to which it will apply" (ref. 34).

In 1972, a second major piece of Federal legislation, the Noise Control Act, strengthened the provisions of the Federal Aviation Act and brought the Environmental Protection Agency (EPA) into the regulation of aircraft noise (ref. 35). This comprehensive enactment was the first venture of the Federal Government into the field of noise pollution control. Under the Act, the EPA is one of the agencies the FAA must consult before adopting noise rules, and except in emergencies, requires consultation with EPA before any exemption is granted under the rules. It contains a prohibition against FAA's granting a new type certificate for any aircraft whose noise could be significantly reduced, unless the FAA has adopted noise standards applicable to the aircraft. It also created a new procedure for joint regulatory action by FAA and EPA, which has led to the enactment of several significant regulations.

As part of its overall aircraft noise and abatement program, the FAA adopted Federal Aviation Regulation Part 36 (FAR 36) in 1969 (ref. 36). It is a comprehensive rule containing highly technical appendixes whose purposes are to require the maximum feasible use of noise control technology, to set standards for the acquisition of noise levels, and to obtain data useful for predicting noise impact in airport neighborhood communities.

Specifically, FAR 36 has prohibited further escalation of aircraft noise levels by establishing noise standards which must be met as a condition for aircraft type certification for all new subsonic turbojet-powered aircraft and subsonic transport category airplanes. As for older aircraft, the Secretary of Transportation has decided that these will have to comply with the regulation by January 1, 1985 either by means of aircraft replacement or retrofitting the engine nacelles (housings) with accoustical material (ref. 37).

FAA regulations also require certain new production subsonic turbojets and subsonic transport category airplanes to comply with noise standards of Part 36, irrespective of the date of type certification as a condition for issurance of airworthiness certificates (ref. 38). (Since the effective date of the regulation, three transport-category turbojet aircraft have been certified--Boeing 747, McDonnell-Douglass DC-10, and Lockheed L-1011 Tristar.)

The most recent FAA regulations for subsonic transport category large airplanes (over 75,000 pounds) and subsonic turbojet powered airplanes provide for three stages of noise reduction, require new applicants for type certification to comply with noise limitations more stringent than previous regulations and increase the strictness of the accoustical change requirements (ref. 39). The FAA has also adopted noise standards for small propellor driven aircraft (ref. 40, p. 1029).

Pursuant to 49 USCS 1431, the FAA has authority to control aircraft noise by control of aircraft operations such as take off, approaches and flight paths. In this vein, the FAA has proposed regulations to require airports, as a condition of certification, to plan for noise abatement (ref. 37), and the EPA has proposed noise abatement minimum altitudes for turbojet-powered airplanes in terminal areas (ref. 40, p. 1072).

Lastly, the FAA has promulgated regulations which almost completely prohibit the operation of any civil aircraft (the FAA has no authority over military aircraft) over the lands and territorial waters of the United States at greater than supersonic speeds unless authorized by the FAA (for certain research and test purposes) (ref. 41). This regulation virtually bans supersonic flights over the United States with the exception of military aircraft.

To date, the Federal Aviation Act and the Noise Control Act of 1972 are the two major pieces of Federal legislation aimed at aircraft noise. However, more legislative action is likely to follow. While the FAA has recently experienced some success in reducing noise emission standards of aircraft, and will continue to require future aircraft types to fully utilize noise suppression technology, Federal law still fails to deal effectively with the problem of cumulative noise exposure near airports. FAA rules also contain many broad

exceptions. They do not apply to military aircraft nor older types of aircraft, and there has yet to be established effective rules limiting airport noise from supersonic transports (SST's) and vertical and short take-off and landing aircract (v/stol's). In view of the pervasive scheme to federal regulations and promotion of air commerce, more comprehensive federal action addressed to all areas of aviation seems inevitable.

3.4.3 International Controls

The FAA's rules have very limited application to the international movement of air cargo. The noise standards in FAR 36, apply only to aircraft registered in the United States, including foreign-made aircraft operated by American carriers (ref. 42). In accord with international practice, foreign air carriers need only have their aircraft certified in the country of origin, meeting the noise standards in force there (ref. 43). The FAA's operating rules, including any that it might adopt to control noise, govern the flight within the United States of U.S.-registered aircraft and, in general, of foreign-registered aircraft. When U.S.-registered aircraft are in another country, they follow its flight rules and, except where inconsistent, American rules as well (ref. 44).

The need for international cooperation on aviation rules is met by the Convention on International Civil Aviation, formulated in Chicago in 1944 and ratified by the U.S. in 1946. This multi-lateral convention established the International Civil Aviation Organization (ICAO), a consultative organ through which contracting nations work out coordinated approaches to aviation problems. Through the work of the ICAO, a number of annexes have been added to the convention establishing "international standards and recommended practices," which apply to more than one hundred and twenty contracting nations.

Annex 16 to the convention prescribes noise standards, similar to those in FAR 36, which bind all ICAO members not filing an exception to them. Although Annex 16 has differed slightly from FAR 36 in the past, recent amendments to FAR 36 have brought United States aircraft noise standards into greater conformity with the international standards adopted by the ICAO. These amendments indicate an awareness on the part of the United States of the need to promote equal treatment for foreign and domestic aircraft operations through international standards. Without this equal treatment, unwarranted economic advantages or disadvantages among competitors could be created in a world air transport environment characterized by diverse national noise requirements.

3.4.4 Impacts on the air cargo system

A number of local governments and airport authorities throughout the United States have imposed or are considering imposing special restrictions, including complete curfews, on nighttime airport operations. Such restrictions might have an especially significant impact on air cargo operations. This disruption would occur mainly because the movement of air freight is heaviest at night. Many shippers (e.g. chemicals and allied products industry, agricultural production, electrical equipment and related industries, and the apparel industry) have come to regard "next-day delivery" as essential. Growth of the system

visualized in this report depends heavily on the ability of the shipper to have packages leave his dock at the close of the work day and reach the consignee the following morning.

Despite recognition of the danger to the air cargo industry from restrictions on night operations, little effort has been put into determining the magnitude of the impacts which may result. To what extent would extensive nighttime restrictions hamper the air cargo industry, the industries that ship their raw materials and products by air, the regions housing these industries, or the U.S. economy as a whole? A recent study by the Port Authority of New York and New Jersey may suggest some dimensions of the problem (ref. 45). While a limited study, it still presents a glimpse of the air cargo industry as it is structured today and how it is likely to be initially affected by airport nighttime restrictions. Further, it provides the basis for studying the flows of aircraft between major national markets, the impacts of curfews on shippers and consignees and, therefore, insight into the nature and magnitude of some of the problems that may result.

Some of the early analysis work of the survey indicates the following about the New York/New Jersey air freight picture.

1. About 35 percent of all Kennedy/Newark Airport freight moves between 10 p.m. and 7 a.m. (472,000 tons in 1977).

2. "All Cargo" aircraft haul about 94 percent of all nighttime tonnage (444,000 tons in 1977).

3. About 28 percent of all nighttime tonnage (132,000 tons in 1977) was transfer freight, some final destination.

4. 61 percent of all New York/New Jersey regional all-cargo activity occurs between 10 p.m. and 7 a.m.

5. Freighters move most of the cargo originating in the five major originating cities. For example, freighters move about 67 percent of Los Angeles' daily tonnage to New York, 86 percent of San Francisco's, about 100 percent of Chicago's, about 100 percent of Seattle's and about 95 percent of San Jose's.

6. Overseas air cargo movement would probably be less affected by nighttime restrictions. Only 22 percent of the overseas tonnage moves between 10 p.m. and 7 a.m. But whatever moves at night moves mostly on freighters (92 percent of total nighttime tonnage moves on freighters).

From this data, one can see that nighttime use restrictions, such as curfews, might have a major detrimental impact on air freight shipment. For this reason, it is easy to understand why the FAA and other proponents of the national air transportation system do not "promote" curfews, but in fact, recommend that proprietor's first consider other approaches (i.e., zoning, noise barrier, engine run-up areas) to abating the noise at their airports.

3.4.5 Future prospects

It is obvious that government at all levels is involved to some extent in aviation noise control. State and local governments, as airport proprietors or through guidance to proprietors, have taken the lead in measures to reduce the impact of noise on people on whom it can have an effect in the near term. The exclusion of noisy aircraft, limitation on number of flights, and constraints on times of flights are all tools used by innovative proprietors faced with the difficult task of balancing the benefits of aircommerce with the equally pressing need to diminish the effect of noise pollution on the people who live and work near airports.

The federal government, on the other hand, while it has taken the lead in regulating the manufacture of aircraft so as to insure greater quiet, is in a paradoxical position. If it joins in the fight in a major way to reduce aircraft noise pollution at airports, it runs the risk of occasioning a reversal of Griggs and a federal assumption of billions of dollars of liability. If it takes more modest steps in the area, it runs the risk of preempting the efforts of state and local governments without substituting anything meaningful for them (ref. 27, p. 36).

It seems inevitable that this split in responsibility will continue, although it seems probably and desirable that there be increased coordination. We expect that the "consultation" process between the FAA and individual airports will be increasingly formalized and that this will promote a tendency to more uniform local practices.

The local and state governments will continue to have the primary responsibility for finding land to locate new airports and expanding existing airports. These difficulties, like those of locating new power plants, presently seem nearly insurmountable and will require substantial innovative thinking. For instance, it has been suggested that some percentage of the tax revenues generated by a new facility could be set aside to provide substantial benefits to residents of the area adversely affected by proximity to the new facility: a town or county might be more willing to permit a new airport to be located in or near it if it meant a substantially lower tax rate.

In regard to aircraft design and aircraft and airport operations, cooperation between all parties (manufacturers, air carriers, airports, and governments at all levels) will remain necessary. Advocates of an enlarged air cargo system must not be blind to the effects of nighttime aircraft operations on surrounding communities. They must use aircraft which utilize the most advanced noise suppression technology and try to schedule flights during hours which would be least offensive to local residents. Local residents and other interested parties must, however, realize that for the air cargo system to function economically, it must be able to land and take off from airports at night. For maximum growth of the air cargo industry, it is essential to maximize the number of cities which can accommodate night flights by cargo planes. Two actions will contribute to this. First, we urge that the FAA work to avoid absolute prohibitions on night operations or restrictions that would effectively prevent night cargo flights. Second, we urge that the developers of a new mid-range cargo aircraft (of the general type described in Chapter 2) pay careful attention to the fact

that it must fly into small airports at night and that it must satisfy noise restrictions appropriate to that circumstance. Further, the imposition of nighttime restrictions, especially curfews, on a national basis would result in a bunching of flights in those hours immediately preceeding the curfew. This would have the two-fold effect of increasing an already serious congestion problem and actually increasing, rather than relieving, the noise problem by increasing the number of flights in the time prior to the curfew. Such a result would be totally inconsistent with the objectives of the federal statutory and regulatory scheme and would cause a serious loss of efficiency in the use of the navigable air space.

3.5 IMPACTS

3.5.1 Introduction

Conditions in the U.S. airline industry today are to a great extent the result of government regulation. Therefore, the recent deregulatory changes will have both direct and indirect impacts on the airline industry, related transportation industries, and the overall transportation system. There is considerable disagreement as well as a lack of historical precedent regarding the exact extent and degree of impact these changes will have. This concluding section attempts to describe what are considered to be some of the potential impacts of these regulatory changes on various segments of society.

The major regulatory changes pertinent to this study are (1) economic deregulation of the airline industry, which includes legislative and regulatory changes, (2) noise regulation, and (3) regulatory changes which have been recommended by the design team, but which are not yet in progress. Since most of the impacts are discussed in more detail in other parts of this report, in this section a brief summary of each impact with the appropriate cross-reference is given.

3.5.2 Impacts of Economic Deregulation

Organizational Impacts. Organizational impacts resulting from deregulation will be most evident in the formation of multi-modal transportation companies. In the short term the most probably intermodal combination in the air cargo industry will involve airlines, freight forwarders, and motor carriers. The long term result, if dictated by economies of scale, will be totally integrated transportation companies (Section 3.5.3.3). A new type of company in air cargo transport which would provide services analogous to those provided by travel agents in passenger service has been suggested (Section 3.2.2.4).

Impacts on Airline Route Systems. The major effect of deregulation on airline route systems will be to allow increased managerial discretion in selecting routes to be served. Airlines will be able to expand their route systems and make route changes necessary to improve operating efficiency. Freedom to own and operate other modes of transportation will increase the number of points served and in effect greatly expand the air cargo route system (Section 3.2.1.2).

Impacts on Service to the Shipper. The increased flexibility of routes and rates permitted by deregulation will encourage carriers to be more responsive to the demands of shippers. Free entry into the industry will provide the environment necessary for price competition. Intermodal operations will increase the number of points served. The combination of these factors should result in overall improvements of service to shippers. Some negative impacts of deregulation are an increase in rates for services which require special handling or for which there is little demand (Section 3.2.2.2) and the reduced liability of carriers under deregulation (Section 5.2.1.4).

Impacts on Employment. There is some concern that deregulation will result in loss of jobs in the transportation industries. The reasons given for

the potential unemployment are varied and include: Job losses resulting from mergers and consolidations, jobs losses resulting from the financial difficulties that some firms would experience after deregulation, and displacement of motor carriers and independent carriers that might result from a restructuring of the transportation industries. Others predict that deregulation will result in increased air traffic which will result in additional jobs. The most probably effect will be: Some unemployment will result for the reasons mentioned above, but additional jobs will be created in the airline and aircraft industries, as well as in other areas of the transportation system. Thus, the overall impact of deregulation on employment will be favorable.

Impacts on Capital Formation. The uncertainties associated with a deregulated environment will result in some initial reluctance on the part of investors to provide capital. However, deregulation will encourage managerial efficiency, which will increase profitability and improve the financial situation of the airline industry. The resulting higher proportion of internally generated capital funds will increase the attractiveness of the airline industry to investors. Thus, although in the short run deregulation is likely to have a somewhat negative impact on capital formation, in the long run it will have a positive impact (Section 4).

Impacts on Subsidies. Transportation subsidies are difficult to analyze. There are problems in determining the amount of subsidies in the various modes and the necessity for such subsidies. Subsidized service in the airline industry is likely to continue under deregulation, since the airline deregulation bill pending in Congress contains a provision which will guarantee "necessary air service to communities" (ref. 46). Services for some types of air cargo might also be deemed necessary (Section 3.2.2.2), and it might be determined in the public interest to provide subsidies for certain modes (Section 5.3.3.3). It has been argued that intermodal ownership would reduce the needs for some government subsidies (3.3.3.3). Thus, direct government subsidies will continue after deregulation, but the extent will depend upon policy decisions which meet the needs of the public interest.

3.5.3 Impacts of Noise Regulation

Impacts on Air Freight. One means of resolving the noise pollution issue around airports has been the imposition of restriction on nighttime airport operations. Since the optimum scheduling of air freight movements is for night flights, curfews restricting nighttime operations will have a detrimental effect on air freight shipments. The result of a preliminary analysis of the impacts of curfews are discussed in Section 3.4.4.

Impacts on the Economic Obsolescence of Older Aircraft. The Secretary of Transportation has decided that older aircraft will have to comply with new noise regulations by January 1, 1985, either through aircraft replacement or retrofit with quiet engines. It has been estimated that approximately 1200 aircraft operated by the domestic trunks and Pan Am will not meet federal noise standards (ref. 47, p. 4). An estimated cost of retrofitting aircraft in service in mid-1972 was given at $456 million (ref. 48, p. 302). Thus, the impact of noise requirements is to increase the capital requirements of the airline industry.

3.5.4 Impacts Resulting from Recommended Changes

The following are positive impacts which we believe would be the result of our recommendations in the legislative and regulatory areas.

1. A restructuring of the regulatory organization into a single agency with functional rather than modal divisions.

2. The attainment of a coordinated transportation system by encouraging the use of a single bill of lading and relaxing restrictions on pick-up and delivery zones.

3. A guaranteed level of service to the shipper by requiring minimum insurance provisions, carrier liability provisions, and preservation of the capability of the national transportation system to handle some classes of special cargo.

3.5.5 Summary

The impacts resulting from legislative and regulatory changes are complex and there is considerable disagreement on what form these impacts will actually take. Because of time limitations, only a brief discussion of these impacts is given in this section, and the most probably impacts as suggested by this study have been presented.

3.6 CONCLUSIONS

In view of recent developments, including the extensive deregulation of air cargo operations as well as changes in airport curfews and continuing noise control efforts, long-term predictions about the impact of regulatory practices on the air cargo industry are exceedingly difficult to make. There is significant difference among analysts regarding the extent and duration of the deregulatory movement. On the other hand, there is general agreement that at least some degree of regulation will continue well into the twenty-first century. Certainly there will continue to be extensive regulation of such matters as safety standards and noise. The major issue is whether or not the regulatory climate will be a force for or against the development of a relatively unified, efficient, and rational transportation system.

The air cargo system can make its most effective contribution if the transportation network is seen as a unified system. It appears that this can be best achieved by unifying national transportation standards and policies--most logically through a unified regulatory agency--and by sufficiently relaxed regulation to allow the marketplace to develop new corporate structures and merchandising methods appropriate to a unified system.

Even the complete elimination of all regulatory constraints would leave substantial problems, resulting from present institutionalized practices, the fragmented nature of the transportation industry, and the contending pressures of special interest groups. Still, appropriate easing and simplifying of regulations will encourage--or at least remove present obstacles to--the evolution of an integrated intermodal freight transportation system in which the air cargo system described in this report can play its optimal role.

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